Name Dai Huang

Notebook Number 728-3

Subject Raw Coke Project

Dates From _____ To _____

4 **Subject**
Cross-Reference (if any)

Raw Coke Campaign (I)

- Raw Materials

  Raw coke: unocal ~3μm (T3349-B, run 5)
  mobil ~3μm (T3349-A, run 5)

  additives:
  - Mesophase coke: KMFC, MPC-1
  - T-mix powder: fine portion of 2μm filler, 20μm molding powder
  - PC coke: 2μm filler

- Mixing:

  Equipment: Lancaster K-Lab mixer

Sample ID	Composition (weight %)
U3K20	80% unocal 3μm + 20% KMFC
U3M20	80% unocal 3μm + 20% MPC-1
U3T20	80% unocal 3μm + 20% F-Tmix
U3P20	80% unocal 3μm + 20% PC coke
m3K20	80% mobil 3μm + 20% KMFC
m3M20	80% mobil 3μm + 20% ~~KMFC~~ MPC-1
m3T20	80% mobil 3μm + 20% F-Tmix
m3P20	80% mobil 3μm + 20% PC coke

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Mixing Procedures

Mix Formulation:

	weight (g)
Raw Coke	~~1600~~ 2,400
Additive	~~400~~ 600
Total	~~2000~~ 3,000

Mixing:

1. Raise the lid, Head "up". Charge the pan with raw coke only;
2. Lower the lid, Head "down", Fram "down"
3. Rotor & Pan on, set rotor and pan at 90/90. Begin addition of additive through funnel.
4. After adolitive addition complete, turn rotor and pan off. Remove funnel and put the plug back.
5. Frame "up" until the pan is fully tilted.
6. Rotor and pan on with 90/90 settings. Mix intensively for 2 minutes
7. Rotor and pan off, Fram "down", Heed "up", unload the mix
8. Weigh the mix.

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Molding

1. Put the mix into ~~7"ϕ x 8"~~ 7"ϕ x 8" bag. Jolt the bag.
2. CIP at 20,000 psi
3. ~~Weigh the~~ Measure the dimension, weight, density

Baking.

Fast baking schedule:

RT → 500°C	15°C/hr	33 hrs
500°C → 1000°C	2.5°C/hr	200 hrs
1000°C	hold 4 hrs	4 hrs
1000°C → 600°C	5°C/hr	80 hrs
		13.21 days

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The new idea of making carbon foam with ~~at~~ natural graphite flake as the additive. — ~~foaming~~ agent.

Precursors: pitch base (isotropic or mesophase)
resins — phenolic or furfuryl alcohol
thermoplastic plastics

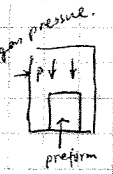
mill these precursors into powders, with the size range from 50-200 mesh

Additive: treated natural graphite flakes.
these flakes can be in the powder forms with the size range of 50 - 200 mesh.

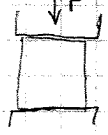
mix these precursors and additive in the mixer, with the ratio of precursor (10-90%) and additive (10-90%).

two different subsequent processes.

i) — Charge the mix into a mold which is ~~is~~molded to form a preform.



— put the preform in the pressure vessel, pull vacuum, then apply the gas pressure range (500 psi — 1000 psi), in the same time ~~to~~ heat the vessel at ~~the~~ different heating rate. (~~20~~ 10-50°C/hr)
for 1-5 hrs. Final temp. @ 800 ~ 1000°C.



ii) — Charge the mix into a mold which will be transfered under a pressure in the same time pass the current through to (the applied pressure can be around 500 ~ 1000 psi.)
heat the mold (10-50°C/hr.) to 800°C ~ 1000°C. For 1-5 hrs.

Then the billets will go through oxidation process if necessary, and graphitization to make final carbon or graphite foam product.

Performed and Recorded by: Dai Huang Date
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8 **Subject**
Cross-Reference (if any)

Sound Absorption

4" ϕ x 1"

4" ϕ x 2"

Standard :

- fiberglass
- Accoustic Tile.
-

220 Flake 88% SO_2
12% H_2O
20% weight

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- E-room
- technology alliance presentation ☆ (A.D. Little) in the share drive.
- April -12. Nanotube talk.

  Carbon blacks.
- New method of making
- degree of communications with Graftech.

  meet with Graftech once a quarter.
- I.P.
  - Notebook
  - e-mail

Next Meeting: April 20.

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First C/C trial at Lawrenceburg. (BP process)

Raw materials: 1. MC 1/4" fiber bundles. ~~IE%~~

2. Standard binder pitch ~~(SX)~~

Composition: Exp. 1: 85% fiber
15% pitch (with sulfur addition)

Exp. 2: 80% fiber
20% pitch. (with S addition

process: · Dry mix fiber + pitch.
· BP process: 13" x 9" x 4 1/2"

Quantity: Each experiment make 2 bricks.

SR is low, might consider to add Sand (%?)

2nd C/C trial at Lawrenceburg (BP process)

Raw materials: 1 a. MC 1/4" fiber bundle.
b. Amoco 1 1/2" fiber with PVC sizing.

2. Amoco mesophase pitch.

Composition: Exp 1: 85% fiber
15% pitch (no sulfur)

Exp 2. 75% fiber
25% pitch (no sulfur).

Fiber

Composite	MC + pitch	Amoco + pitch
85/15	2	1
75/25	2	1

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3322

Trial 1. 15% pitch 1840-94-3208
88% C Fibers

Trial 2 15% pitch
5% Sand
80% C Fiber.

15%, 88%

half power

NMG — sandless ✓NMD. granule ✓ firing schedule. (slower schedule, lower power input)
✓NMA pressure
✓water spray.

Performed and Recorded by: Dri Hall **Date**
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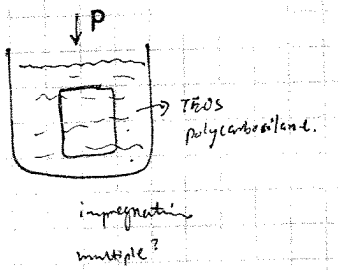
Issues / directions:

- Zotek preform impregnation
- SiO_2 & and SiC, TEOS coating (conversion temp. & Energy, etc.) Gibbs
  TEOS solution polycarbosilane, etc. impregnation.
- different graphitication temperature

www.fortafil.com.

- pressure baking.
- CVI
- FM



impregnation multiple?

ASG group meeting 6/08/01

- Rigid Insulation. { isotropic fiber / sugar binder. Clarksburg

- Grafoil sheet for EMI application (cell phone, laptop computer).

- 50%. 75% of ACM graphite powder. (thermally conductive polymer).

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